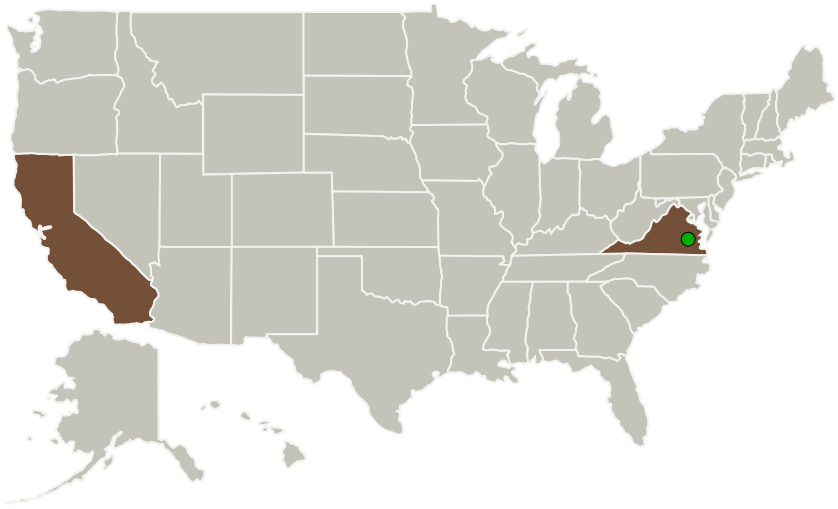
3D Flash LIDAR Real-Time Embedded Processing, Phase I

Completed Technology Project (2011 - 2011)

Project Introduction

Advanced Scientific Concepts, Inc. (ASC) is a small business, which has developed a compact, eye-safe 3D Flash LIDARTM Camera (FLC) well suited for real-time spacecraft trajectory, speed, orientation measurements relative to the planet's surfaces and evaluating potential hazards during the critical landing sequence. Data collected using ASC's FLC at JPL's Mars Yard and in NASA ALHAT flight tests demonstrated that ASC Flash LIDAR system can meet the requirements for Entry Descent and Landing (EDL). Aboard the Space Shuttle Endeavour (STS-127), SpaceX and ASC demonstrated the DragonEye Autonomous Rendezvous and Docking (AR&D) Flash LIDAR solution in low earth orbit, the first Flash LIDAR in space. ASC has developed the core technology for Flash LIDAR with its 3D-FPA hybrid and would like to work with NASA to further enhance the functionality of the 3D sensor by adding embedded image enhancement and classification algorithms. For this SBIR solicitation, ASC is proposing embedded processing, for image enhancement and hazard identification, of 3D Flash LIDAR point clouds.

Primary U.S. Work Locations and Key Partners



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Organizations Performing Work	Role	Type	Location
Advanced Scientific Concepts, Inc.	Lead Organization	Industry	Goleta, California
Langley Research Center(LaRC)	Supporting Organization	NASA Center	Hampton, Virginia

Primary U.S. Work Locations	
California	Virginia

Project Transitions

February 2011: Project Start

September 2011: Closed out

Closeout Summary: 3D Flash LIDAR real time embedded processing, Phase I P roject Image

Closeout Documentation:

- Final Summary Chart Image*(https://techport.nasa.gov/file/140191)*

Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

Lead Organization:

Advanced Scientific Concepts, Inc.

Responsible Program:

Small Business Innovation Research/Small Business Tech Transfer

Project Management

Program Director:

Jason L Kessler

Program Manager:

Carlos Torrez

Principal Investigator:

Brad Short

Co-Investigator:

Bradley Short

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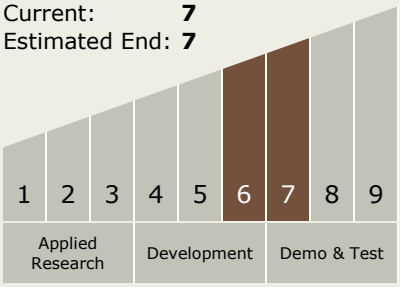
Technology Maturity (TRL)

Start: **6**
Current: **7**
Estimated End: **7**



Technology Areas

Primary:

- TX02 Flight Computing and Avionics
  - TX02.1 Avionics Component Technologies
    - TX02.1.5 High Performance Field Programmable Gate Arrays

Target Destinations

The Moon, Mars, Outside the Solar System, The Sun, Earth, Others Inside the Solar System